UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,226	02/06/2006	Evy Lundgren-Akerlund	10142.0005	8983

22852 7590 11/29/2006

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
HADDAD, MAHER M	

ART UNIT	PAPER NUMBER
1644	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/553,226	LUNDGREN-AKERLUND, EVY	
	Examiner	Art Unit	
	Maher M. Haddad	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *7-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 31-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/10/2006 and 11/07/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-44 are pending.

2. Applicant's election with traverse of Group 1, claims 1-6 and 31-44 drawn to a monoclonal antibody or antigen binding fragment thereof, a kit, a composition and a method of making filed on 9/18/06, is acknowledged.

Applicant's traversal is on the grounds that the application are untied b y the single inventive concept of a monoclonal antibody or fragment thereof that binds specifically to the extracellular I-domain of the integrin alpha10 chain. Applicant contends that the inventive concept that unites the instant claims provides a special technical feature that contributes to the art. Applicant points to MPEP 803. This is not found persuasive because Applicant's inventions do not contribute a special technical feature when viewed over the prior art they do not have a single general inventive concept and so lack unity of invention as set forth in the previous Office Action.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 7-30 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b) as being drawn to nonelected inventions.

4. Claims 1-6 and 31-44 are under examination as they read on a monoclonal antibody or antigen binding fragment thereof, a kit, a composition and a method of making.

5. Applicant is advised that should claim 1 be found allowable, claim 44 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

6. Applicant's IDS, filed 10/10/06 and 11/7/06, is acknowledged.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4 and 36-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The recitation "single antibodies" in claims 4, line 3, is ambiguous. It is unclear how the antibody fragment is single antibodies.

B. The recitation "a pharmaceutical composition for gene therapy treatment of musculoskeletal diseases, arthritis or atherosclerosis comprising a monoclonal antibody or a fragment thereof" claimed in claim 35 is ambiguous. It unclear how a technique for the treatment of genetic disease in which a gene that is absent or defective is replaced by a healthy gene, would involve the claimed antibody.

C. The recitation " an adenovirus for gene therapy treatment of arthritis" claimed in claim 37, is ambiguous. It unclear how a technique for the treatment of genetic disease in which a gene that is absent or defective is replaced by a healthy gene, would involve the claimed antibody.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-6 and 31-44 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is apparent that the hybridoma DSM ACC2583 that produces the mAb365 antibody and NSO cells are required to practice the claimed invention. As a required element, it must be known and readily available to the public or obtainable by a repeatable method set forth in the specification. If it is not so obtainable or available, the enablement requirements of 35 USC 112, a deposit of the hybridoma/cells, which produces this antibody, may satisfy first paragraph. See 37 CFR 1.801-1.809.

If the deposit has been made under the terms of the Budapest Treaty, an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the hybridoma/cells has been deposited under the Budapest Treaty and that the hybridoma/cells will be irrevocably and without restriction or condition released to the public upon the issuance of a patent would satisfy the deposit requirement made herein. See 37 CFR 1.808. Further, the record must be clear that the deposit will be maintained in a public depository for a period of 30 years after the date of deposit or 5 years after the last request for a sample *or for the enforceable life of the patent whichever is longer*. See 37 CFR 1.806. If the deposit has not been made under the Budapest treaty, then an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature must be made, stating that the deposit has been made at an acceptable depository and that the criteria set forth in 37 CFR 1.801-1.809, have been met.

11. Claims 33-37 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the a monoclonal antibody capable of binding to the extracellular I-domain of the integrin alpha10 chain which is specifically recognized by the monoclonal antibody produced by the hybridoma deposited under the accession number DSM ACC2583 or antigen-binding fragment thereof, a hybridoma cell line, a composition and a kit thereof does not reasonably provide **enablement** for an administration vehicle comprising the monoclonal antibody or fragment claimed in claim 33 and 34 or a pharmaceutical composition for the treatment of musculoskeletal diseases, arthritis or atherosclerosis comprising a monoclonal antibody or a fragment thereof claimed in claim 35, or a pharmaceutical composition for gene therapy treatment of musculoskeletal diseases, arthritis or atherosclerosis comprising a monoclonal antibody or a fragment thereof claimed in claims 36 and 37. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with this claim.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

At issue is whether or not the claimed composition would function as pharmaceutical composition or administration vehicle. In view of the absence of a specific and detailed description in Applicant's specification of how to effectively use the pharmaceutical composition/ administration vehicle as claimed, and absence of working examples providing evidence which is reasonably predictive that the claimed pharmaceutical composition/ administration vehicle are effective for in vivo use, and the lack of predictability in the art at the time the invention was made, an undue amount of experimentation would be required to practice the claimed pharmaceutical composition with a reasonable expectation of success.

Further, on the basis of the disclosed expression of integrin alpha10beta1 on chondrocytes in articular cartilage, in the vertebral column, in trachea and in the cartilage supporting the bronchi. The integrin is also found in specialized fibrous tissues such as the fascia of skeletal muscle and tendon, in the ossification groove of Ranvier and in the aortic and atrioventricular valves of the heart (see p. 1 last ¶), applicant concludes that the scope of the antibody against $\alpha 10$ encompassed by the claimed invention can have biological activity to musculoskeletal diseases, arthritis and atherosclerosis *in vivo* and be provided as pharmaceutical compositions/administration vehicle to subjects including human to effectively treat musculoskeletal diseases, arthritis and atherosclerosis. There must be a rigorous correlation of pharmacological activity between the disclosed *in vitro* studies and an *in vivo* use to establish practical utility.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-2 and 31, 33, 35-36 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/51639 (IDS Ref).

The WO `639 publication teaches and claims monoclonal antibodies that are capable of binding to alpha10 protein or fragments thereof (see published claims 10-11 in particular), wherein the is the I-domain comprising the amino acid 140-337 of α10 protein (see p. 9, last ¶, P. 6, lines 8-10 and lines 19-21 in particular), wherein the antibody is polyclonal or monoclonal antibodies (see P.6, line 34 in particular). Further the `639 publication teaches a pharmaceutical composition comprising an antibody which is capable of binding subunit α10 (see p. 10, lines 1-8 in particular).

Since the office does not have a laboratory to test the reference antibodies, it is applicant's burden to show that the reference antibody does not specifically recognized by the monoclonal antibody produced by the deposited hybridoma recited in the claim. See In re Best, 195 USPQ 430, 433 (CCPA 1977); In re Marosi, 218 USPQ 289, 292-293 (Fed. Cir. 1983); and In re Fitzgerald et al., 205 USPQ 594 (CCPA 1980).

The recitation of intended use per se does not add patentable weight per se as the claims read on the active or essential ingredients of the claimed composition. The claimed functional limitation would be inherent properties of the referenced antibody composition. A composition comprising anti-I-domain of α10 integrin antibodies is the same composition irrespective of its intended use. The claims read on the active or essential ingredients of anti-I-domain of α10 integrin antibodies.

Claim 44 is included because antibody is antibody irrespective of how it is made. The patentability of a product does not depend on its method of production. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), MPEP 2113.

The reference teachings anticipate the claimed invention.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/51639 (IDS Ref) in view of Owens *et al.*

The teachings of WO 99/51639 publication have been discussed, supra.

The claimed invention differs from the reference teachings only by the recitation that the antibody or fragment is humanized in claim 3, and that the fragments is selected form the group consisting of Fv, Fab, Fab`, F(ab`)2 and single chain antibodies in claim 4.

Owens *et al* teach the modification of murine antibodies such as a chimeric antibody, a single chain antibody, a Fab fragment, a $F(ab')_2$ fragment or a humanized antibody antibodies monoclonal antibody technology, chimeric, single chain, Fab fragments, and $F(ab')_2$. Owens *et al* further teach humanized antibodies use in therapy of human diseases or disorders, since the human or humanized antibodies are much less likely to induce an immune response. Also, antibody fragments are the reagents of choice for some clinical applications, and the chimeric antibodies offers the ability to mediate antigen-dependent cytotoxicity and complement – dependent cytotoxcity (see the entire document).

Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to produce the monoclonal antibody taught by the `639 publication as chimeric, humanized antibody, Fab and $F(ab')_2$ fragments taught by the Owens *et al.*

One of ordinary skill in the art at the time the invention was made would have been motivated to do so because the humanized antibodies are much less likely to induce an immune response and because the antibody fragments are the reagents of choice for some clinical applications and the chimaeric antibodies offers the ability to mediate antigen-dependent cytotoxicity and complement-dependent cytotoxcity as taught by Owens *et al.*

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

15. Claims 1 and 32, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/51639 (IDS Ref) in view of US. Pat. No. 6,096,873.

The teachings of WO 99/51639 publication have been discussed, supra.

The claimed invention differs from the reference teachings only by the recitation that the antibody or fragment further comprises a detectable label in claim 32, the kit of claim 38, and 40.

The `873 patent teaches two types of diagnostic assay as a matter of convenience, the reagents for these assays can be provided in a kit, i.e., a packaged combination of reagents, for combination with the sample to be tested. The components of the kit will normally be provided in predetermined ratios. Thus, a kit may comprise the antibody labeled directly or indirectly with a suitable label. In addition, other additives may be included such as stabilizers, buffers and the like. The relative amounts of the various reagents may be varied widely to provide for concentrations in solution of the reagents which substantially optimize the sensitivity of the assay.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the anti-I domain α10 integrin antibody in a kit.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so as a matter of convenience and to substantially optimize the sensitivity of the assay as taught by the `873 patent.

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

16. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/51639 (IDS Ref) in view of Male (immunology 1991).

The teachings of WO 99/51639 have been discussed, supra

The claimed invention differs from the reference teachings only by the recitation that the monoclonal antibody or a fragment thereof is bound to a solid phase in claim 39.

Male teaches an affinity chromatography method that is used to isolate pure antibodies. A column is prepared from antigen covalently coupled to an inert solid phase such as crosslinked dextran beads. Male further teaches that specific antibody binds to the antigen, while unbound antibody and other proteins are washed through. Finally, Male teaches that by using antibody bound to the solid phase the technique can be used to isolated antigen (page 119 under affinity chromatography in particular).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to bound the antibodies taught by the '639 publication to a solid phase.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so because using antibody bound to the solid phase the technique can be used to isolated antigen as taught by Male.

From the combined teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 1-2 and 31, 33, 35-36 and 44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 135 and 137-143 of copending Application No. 11/347,179. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications are claiming monoclonal antibodies capable of binding to the extracellular I-domain of the integrin alpha10 and a composition thereof. Since the office does not have a laboratory to test the reference antibodies, it is applicant's burden to show that the reference antibody does not specifically recognized by

the monoclonal antibody produced by the deposited hybridoma recited in the claim. See In re Best, 195 USPQ 430, 433 (CCPA 1977); In re Marosi, 218 USPQ 289, 292-293 (Fed. Cir. 1983); and In re Fitzgerald et al., 205 USPQ 594 (CCPA 1980).

The recitation of intended use per se does not add patentable weight per se as the claims read on the active or essential ingredients of the claimed composition. The claimed functional limitation would be inherent properties of the referenced antibody composition. A composition comprising anti-I-domain of $\alpha 10$ integrin antibodies is the same composition irrespective of its intended use. The claims read on the active or essential ingredients of anti-I-domain of $\alpha 10$ integrin antibodies.

Claim 44 is included because antibody is antibody irrespective of how it is made. The patentability of a product does not depend on its method of production. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), MPEP 2113.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. No claim is allowed.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maher Haddad whose telephone number is (571) 272-0845. The examiner can normally be reached Monday through Friday from 7:30 am to 4:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 18, 2006

Maher Haddad

Maher Haddad, Ph.D.
Primary Examiner
Technology Center 1600